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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/800,182 | 03/11/2004 | Ying Cui | 42390P12369C | 8621 |
| 7590 | 10/22/2004 | | EXAMINER | |
| Sheryl Sue Holloway BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP Seventh Floor 12400 Wilshire Boulevard Los Angeles, CA 90025 | | | CHAUHAN, ULKA J | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2676 | |
| DATE MAILED: 10/22/2004 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------------------|-----------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/800,182 | CUI, YING <i>E</i> | |
| | Examiner Ulka J. Chauhan | Art Unit 2676 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 11 March 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 31-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 31-35 and 38-45 is/are rejected.
- 7) Claim(s) 36 and 37 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 11 March 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3/11/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-30 are cancelled; claims 31-45 are newly added and pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 31-33, 39, 40, and 43-45 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,961,617 to Tsang.**

4. As per claim 31, Tsang teaches a computer system comprising:

a graphics controller coupled to a graphics memory (Fig. 2A: *display processor 166 coupled to memory 170*); and

a compression process invoked by the graphics controller upon receipt of an idle notification to cause the graphics controller to compress an idle graphics frame for storage into the graphics memory (c. 5 ll. 26-35: *The system 160 enters the SMART mode whenever it detects a short period of display inactivity. Once in the SMART mode, the display processor 166 generates a compressed version 176j of on-screen image unit from the uncompressed image data 174i and stores the compressed data 176j at an address 177j in the memory 170*).

5. As per claims 32 and 33, Tsang discloses that the compression process further causes the graphics controller to represent a pixel value in the idle graphics frame with a code and that the code requires fewer bits than the pixel value (c. 5 ll. 44-46: *The size of the compressed data a176j is usually far smaller than the size of the uncompressed data 174i*; c. 13 ll. 8-15: *the compressed*

version is compressed using a compression method selected from a plurality of methods including run length encoding; JPEG; and MPEG).

6. As per claim 39, Tsang discloses uncompressing a compressed idle graphics frame retrieved from graphics memory (Fig. 3: *image decompression engine 212*; c. 8 ll. 60-c. 9 ll. 6: *the compressed data 176j is transferred from the address 177j and written to the data buffer 210. The compressed data is then input to the image decompression engine 212, which decompresses the data in real time and output the decompressed data*).

7. As per claim 40, Tsang discloses that the graphics controller replaces the code with the pixel value when uncompressing the compressed idle graphics frame (c. 9 ll. 18-25: *The image processing unit 216 converts the image data to actual pixel data depending on the current display mode... This operation is necessary as image data from memory typically corresponds to a representation of an image, not actual pixel data from the image*).

8. As per claim 43, Tsang discloses that a mode signal 205 indicates the system mode (ON, SMART, or OFF) and embodies information from state bits 254 in the control registers 206 (c. 7 ll. 1-5). The CPU 164 writes and reads the state information 254 (c. 7 ll. 8-9). Therefore Tsang implicitly teaches that the CPU sends the idle notification (sets the system mode to SMART). Tsang also discloses that the computer is a single-chip computer 162 comprising a CPU, memory controller, and a display processor (c. 4 ll. 40-41), and that the memory controller 168 generally services the CPU 164 (FIG. 2A) or co-processors other than the display processor 200 (c. 8 ll. 5-7). Therefore Tsang implicitly teaches that the CPU or the co-processors are coupled to the memory controller through a system bus and send the idle graphics frame to the display processor through the memory controller.

9. As per claim 44, Tsang discloses that the system further comprises a system memory coupled to the processor through the system bus, the system memory comprising the graphics memory (Fig. 2A: *memory 170 including locations 174 and 176 for storing display data*; c. 8 ll. 5-7: *the memory controller 168 generally services the CPU 164 (FIG. 2A) or co-processors other than the display processor 200*).

10. As per claim 45, Tsang discloses a display coupled to the graphics controller to display graphics frames stored in the graphics memory (Fig. 2A: *display panel 180 coupled to the display processor*).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 34, 35, 38, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,961,617 to Tsang and U.S. Patent No. 5,740,345 to Danielson et al.

13. As per claim 34, Tsang does not expressly teach that the compression process further causes the graphics controller to select the pixel value based on a number of occurrences of the pixel value in the idle graphics frame. Danielson teaches displaying computer graphics data stored in a compressed format with an efficient color indexing system in which the lengths of runs of pixels having the same color is monitored and if a color is not in the color dictionary, then the length of its run is compared to the dictionary entry with the shortest length (Mincount) to replace the color with the shortest run in the color dictionary 62 with that color (c. 6 ll. 39-50

ad Fig. 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the method of replacing colors in the color dictionary based on the number of occurrences of the color as taught by Danielson in combination with the Tsang's compression process in order to provide a group of colors reflecting the majority of colors necessary to represent the compressed display data.

14. As per claim 35, Tsang does not expressly teach that the compression process further cause the graphics controller to select the pixel value if the number of occurrences satisfies a threshold. Danielson discloses that to further minimize the size of the compressed data memory 46, references to the color dictionary 62 could be made only if a threshold number of consecutive pixels was exceeded. (c. 5 ll. 7-10).

15. As per claims 38 and 41, Tsang does not expressly teach that the compression process further causes the graphics controller to encode a compressed idle graphics frame to identify the code within the compressed idle graphic frame, or that the graphics controller decodes the compressed idle graphics frame when uncompressing the compressed idle graphics frame. Danielson discloses that in addition to detecting runs of pixels with the same color, repeating patterns could also be detected and compressed in order to achieve additional compression (c. 8 ll. 64-c. 9 ll. 6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the detecting and compressing of repeating patterns as taught by Danielson in combination with Tsang's compression in order to provide additional level of compression. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have decoded the repeating pattern when uncompressing the data in order to display the correct data on the display.

16. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,961,617 to Tsang and U.S. Patent No. 6,359,625 to Perego.

17. As per claim 42, Tsang does not expressly teach that the compression process further causes the graphics process to compress a non-idle graphics frame upon receiving an override indicator. Perego discloses a video refresh compression system in which a graphics engine updates a data element in a full frame buffer and a data compressor concurrently compresses and stores pixel data in a compressed frame buffer (c. 3 ll. 23-28 and ll. 51-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the compression of all frame buffer data as taught by Perego in combination with Tsang's computer system whereby compressing changing frames via an override reduces the bus bandwidth thereby reducing power consumption.

Allowable Subject Matter

18. Claims 36 and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter: the cited prior art does not disclose or render obvious the combination of elements recited in the claims. Specifically, the cited prior art fails to disclose or render obvious the following limitations: the threshold is a percentage of a total number of occurrences of pixel values in the idle graphics frame as per claim 36; and wherein the compression process further causes the graphics controller to evaluate two idle graphics frames to determine the number of occurrences as per claim 37.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ulka J. Chauhan whose telephone number is (703) 305-9651. The examiner can normally be reached on Mon. through Fri., 9:30 a.m. to 4:00 p.m.
21. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (703) 308-6829. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
22. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ulka J. Chauhan
Primary Examiner
Art Unit 2676

September 17, 2004